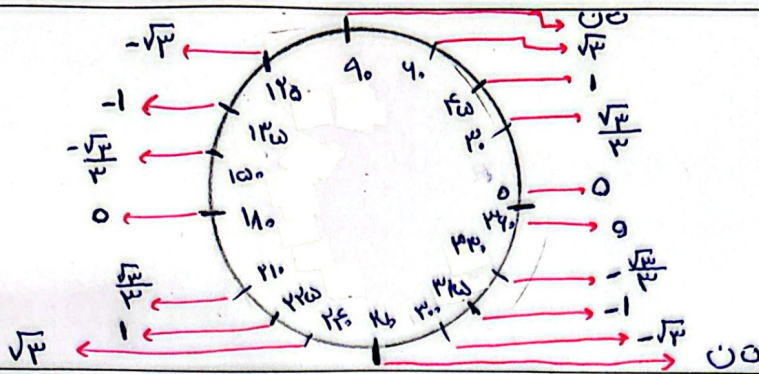




الف) $\sin \frac{\pi}{4} + \cos \pi + 2 \tan \frac{3\pi}{4} =$

$\frac{1}{\sqrt{2}} + (-1) + 2(-1) = \boxed{-\frac{2+\sqrt{2}}{\sqrt{2}}}$

ب) $\cot \frac{\pi}{4} + 3 \cot \frac{\pi}{4} - 2 \tan \frac{\pi}{4} =$

$-\frac{\sqrt{3}}{3} + 3(\frac{\sqrt{3}}{3}) - 2(-\frac{\sqrt{3}}{3}) = \boxed{\frac{4\sqrt{3}}{3}}$

ج) $-\cos \frac{\pi}{4} + \sin \frac{\pi}{4} - 3 \sin \frac{\pi}{4} =$

$-(-\frac{\sqrt{2}}{2}) + \frac{\sqrt{2}}{2} - 3(\frac{\sqrt{2}}{2}) = \boxed{-\frac{\sqrt{2}}{2}}$

د) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{4}) =$

$1 + 1 = \boxed{2}$

$a^2 + 2a = \frac{2a+a+2}{2a}$

$a^2 + 2a = 0$

$(a+2)(a-1) = 0$

$\downarrow \quad \downarrow$
 $-2 \quad 1 \rightarrow \boxed{a=1}$ و $a=2$

$f(1) = 1 + 2 = \boxed{3}$

$1n+1 \leq 2 \quad m+1 \leq 2 \quad n+1 \leq 2 \rightarrow m \leq 2 \rightarrow$ عدد و مشترک

$2(3)^2 - b = a + 2(3)$

$11 - b = a - 6$

$\frac{11-6}{2} = a+b$

$\boxed{a+b=2.5}$

الف) $x^3 - 4x^2 \neq 0$

$x^2(x-4) \neq 0 \quad D = \mathbb{R} - \{0, 4\}$

ب) $2x^3 + 4x^2 + 2x + 4 \neq 0$

$2x^2(x+2) + 2(x+2)$ از $(x+2)$ فاکتور می‌کشیم

$(x+2)(2x^2+2) \neq 0 \quad D = \mathbb{R} - \{-2\}$

$\downarrow$
 $x \neq -2$ زیرا توان می‌باشد

الف) $n^2 - 1 \geq 0 \quad n^2 \geq 1 \rightarrow n \geq 1 \text{ یا } n \leq -1$ $n \geq 2 \geq 0 \quad n \geq 2$ $D = [2, +\infty)$	ب) $4 - 3n \geq 0 \quad n \leq \frac{4}{3}$ $4n - 3 \geq 0 \quad 4n \geq 3 \quad n \geq \frac{3}{4}$ $D = (\frac{3}{4}, \frac{4}{3}]$	۶
$4n - a \geq 0 \rightarrow \dots, 4n \geq a \rightarrow n \geq \frac{a}{4}$ $b - 3n \geq 0 \rightarrow b \geq 3n \rightarrow \frac{b}{3} \geq n$	$\frac{a}{4} \leq n \leq \frac{b}{3} = \text{مستطیل}$ $(\frac{a}{4}, \frac{b}{3})$ $\frac{a}{4} = 2 \rightarrow a = 8 \quad \frac{b}{3} = 2 \rightarrow b = 6$ دسته فقط {۲} $\frac{b}{a} = \frac{4}{12} = \frac{1}{3}$	۷
الف) $\sqrt{\frac{n^2 - 9}{n^2 - 12n + 4}} = \frac{(n-3)(n+3)}{(n-2)(n+2)}$ $(n-3)(n+3) = (n-2)(n+2)(n-3)(n+2)$ $\begin{array}{c c c c c} -3 & -2 & 2 & 3 & \\ \hline + & - & - & + & + \end{array} \quad D = (-\infty, 2) \cup (2, 3) \cup (3, +\infty)$	ب) $n^3 - 2n^2 - 5n + 4 \div (n-1) = n^2 - n - 4$ $n^3 - 2n^2 - 5n + 4 = (n-1)(n-3)(n+2)$ $n^3 + 2n^2 - 5n - 4 \div (n+1) = n^2 + n - 4$ $n^3 + 2n^2 - 5n - 4 = (n+1)(n-2)(n+2)$ $\begin{array}{c c c c c c} -3 & -2 & -1 & 1 & 2 & 3 \\ \hline + & - & + & - & + & - \end{array} \quad D = (-\infty, -3) \cup (-2, -1) \cup (1, 2) \cup (3, +\infty)$ ریشه های صحیح	۸
الف) $2[n] - 4 \geq 0$ $2[n] \geq 4$ $[n] \geq 2$ $D = [2, +\infty)$	ب) $2[n] - 5 \geq 0$ $2[n] \geq 5$ $[n] \geq \frac{5}{2}$ $[n] \geq 3 \rightarrow [n] \geq 3$ $D = [3, +\infty)$	۹
الف) $\frac{n+1}{n-3} \geq 0 \quad \frac{n+1}{n-3} \geq 0 \rightarrow n \neq 3$ $\frac{4-n}{n^2+2n+4} \geq 0 \quad 4-n \geq 0 \quad 4 \geq n$ $4 - 4(1)(4) = -12$ مخرج همیشه دارد $D = [-1, 4] - \{3\}$	ب) $2 - [n] \geq 0$ $[n] - 4 \geq 0$ $[n] \geq 4$ $n \rightarrow [4, +\infty)$ $n \in (-\infty, 3)$ اشتراک ندارند $D = \emptyset$	۱۰

دستی سوال ۸ قسمت ب) $(-\infty, 3) \cup (-2, -1) \cup (1, 2) \cup (3, +\infty)$